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ABSTRACT

This guide is designed to provide elementary school teachers with a harmless, inexpensive, clean, odorless, and easy-to-care-for insect-rearing project for the classroom. The following topics are included: (1) instructions for the care and feeding of the beetle larvae; (2) student activities for observing larval characteristics and behavior patterns; (3) a student motor activity for acting out larval movement; and (4) an art activity for making a clay model of the larvae. Full-page drawings provide different structural views of the larval and adult stages of the beetle, and supply names for the different body parts. (JW)

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RAISING BEETLES IN A CLASSROOM

by

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Mealworms are baby beetles. They are ideal for classroom insect study because they are:

harmless

cheap — odorless

clean — easy to care for

AND

can go weeks at a time without attention

CARE OF LARVAE - Keep the mealworms in bran or oatmeal in a jar or other smooth sided wide-mouth container. A piece of nylon hose attached with a rubber band will insure captivity.

I prefer oatmeal to bran. The bran is so light and fluffy that it invites blowing. The oatmeal is familiar and an apprehensive child likes to know that although the animal would love a bite of his oatmeal cookie, or cereal, it would not bite him.

The larvae manufacture water (metabolic) from the cereal. They do crave moisture and to prevent cannabalism, place 1/2 a potato, cut side down, in the container. If the moisture molds the cereal, replace the cereal because of odors and allergies in some people. The mealworms won't care.

Pick up larvae gently with fingers or a spoon, or pour them on a tray and brush them onto an index card.

If they fall on the floor or table top, the index card works well.

Pass the larvae to the children in 3 oz. Dixie cups. You can stack them with the larvae in them because of the lip on the bottom. The larvae can't climb out. You can use the cups to keep count of the mealworms that are out.

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LARVAL OBSERVATIONS

Identification of parts - go back and forth from picture to animal - use antennae, head, thorax, abdomen, insect, larva in sentences etc. Middle grades can fill in blanks and keep data sheets etc.

Which end is front?
How do they move?
How many segments are there?
How many legsdo they have?
Can they back up?(yes)
Do big larva have more segments than little larvae? (no)

These are fine first observations. Later, when your students are comfortable handling the animals, try these:

Do the larvae have a preference for light or dark? Put the mealworms in a lid (quart jar or larger) and cover 1/2 with dark paper. Will the mealworm usually stay in the light or usually go to the dark? (dark)

The larvae like to follow edges. Give the students a defined area, a piece of paper, a tray etc., popsicle sticks, and a lively baby beetle. Let them watch as it moves along the edges. Why do they choose this? Do you think they seewell? When do you "feel" your way along?

MOTOR ACTIVITY

How can you walk with six legs? Have three students stand one behind the other and move with "six" legs. Can other teams do it differently?

CLAY - roll model beetle larvae. Mark off the head, thorax, and abdomen. Use toothpicks for antennae and legs.

. . . . . .

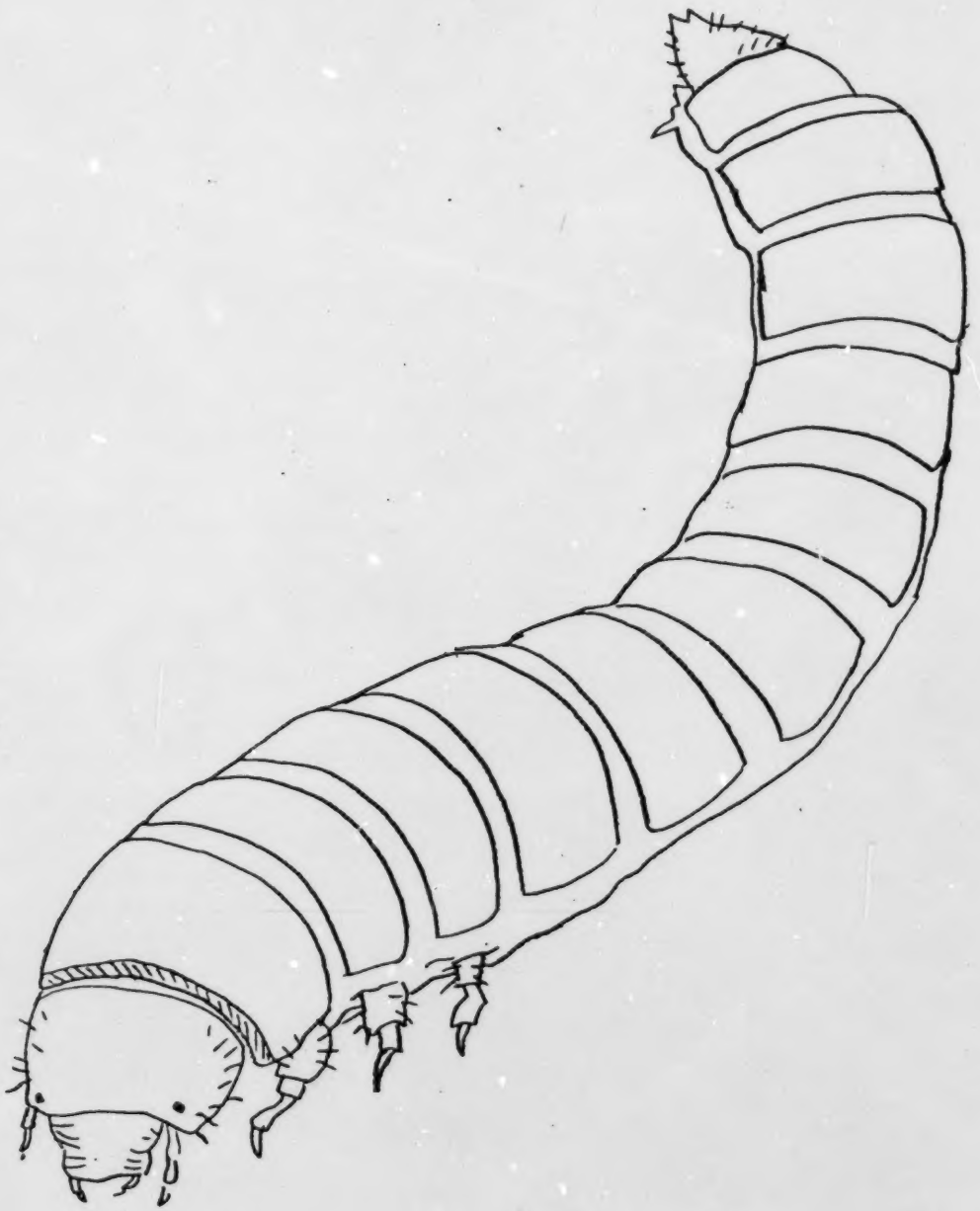
PUPAE - Fully developed larvae change into inactive pupae. This usually occurs on the surface of the food. After a day or so of pupae observations, separate some fresh unhandled pupae into a similar container.

Evidentally the heat from the hands, or the sudden twists when the pupae are moved, interfer with the normal development and deformed adult beetles are the result.

To insure normal development, do not handle the ones you set aside. When the pupae develop dark brown lines along the leg and antennae areas, bring them out again. Beetles will emerge in the next day or so.

BEETLES - Newly emerged beetles are a pale oatmeal color. This changes through many browns to a black beetle. Manufacture a climbing structure for them and put it in the container. (A piece of berry basket?)

The beetles will mate and lay eggs. In a few weeks very tiny beetle larvae can be seen in the fine powder on the bottom of the container. You have helped your students to see a complete life cycle of an animal with complete metamorphosis.



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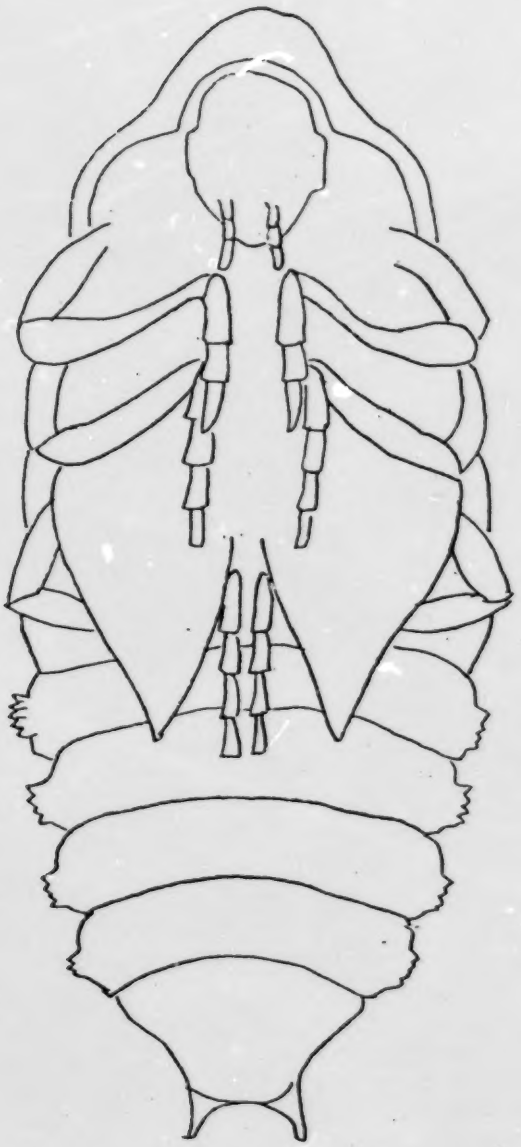

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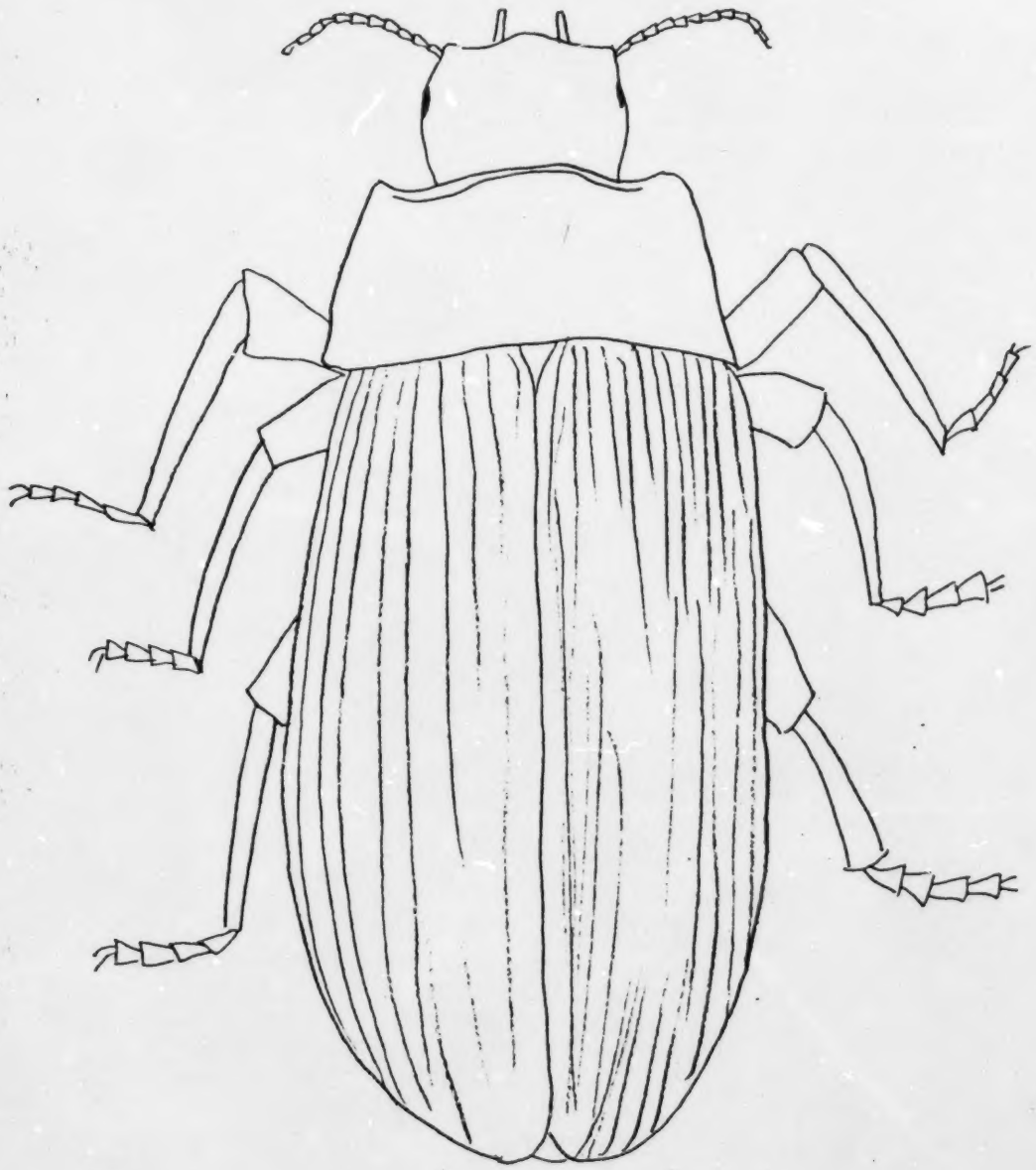

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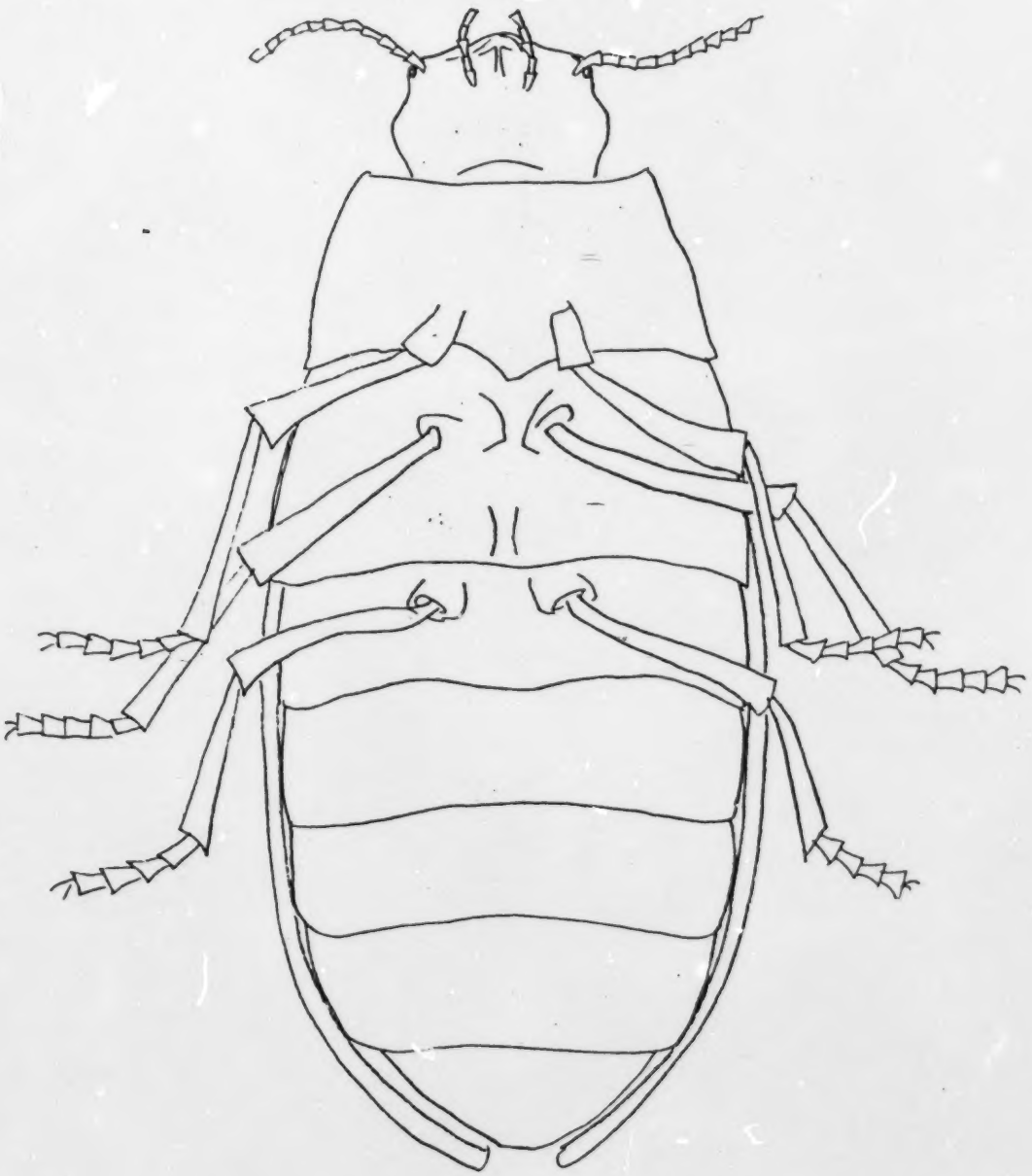

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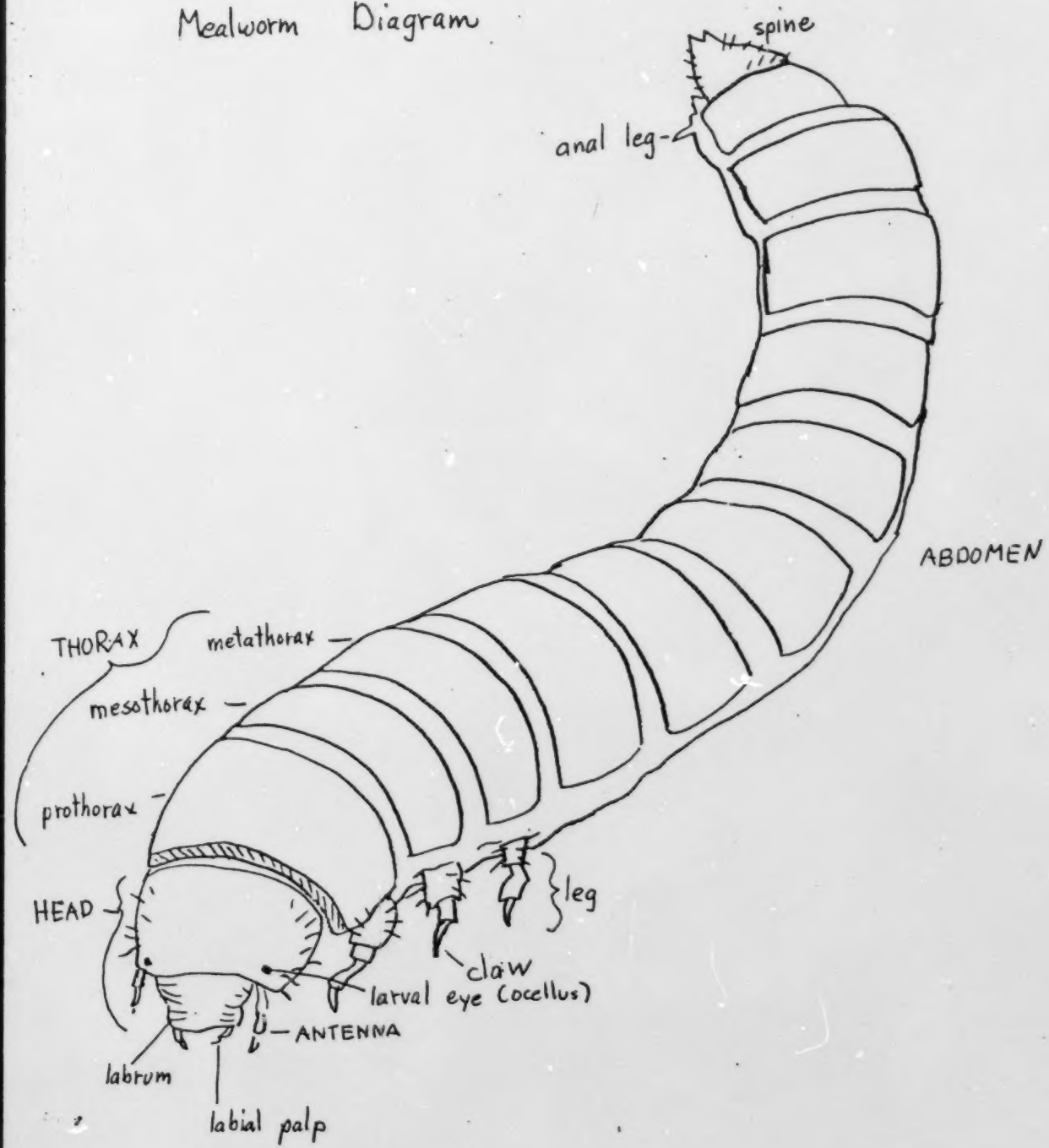
Mealworm Diagram



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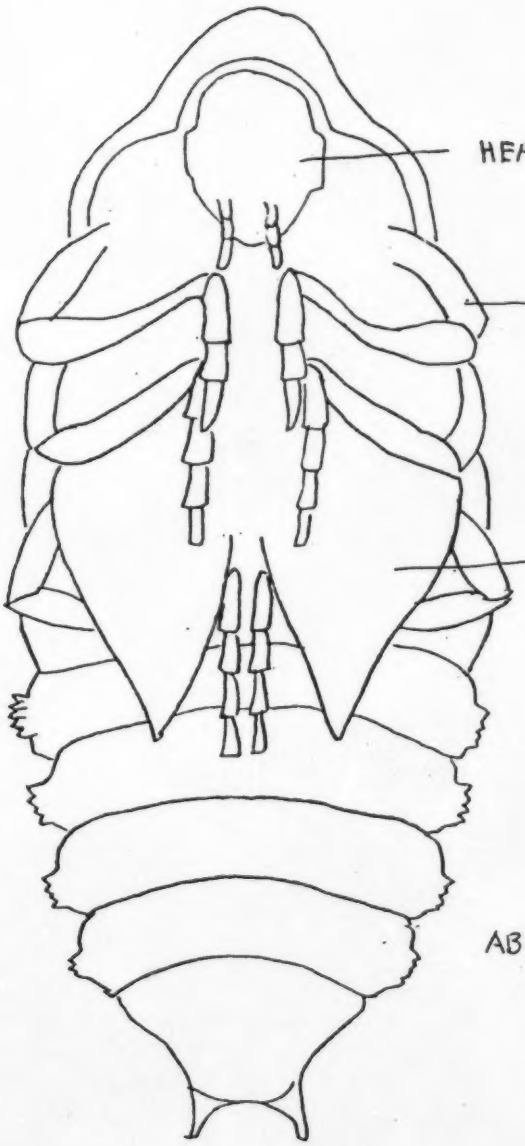

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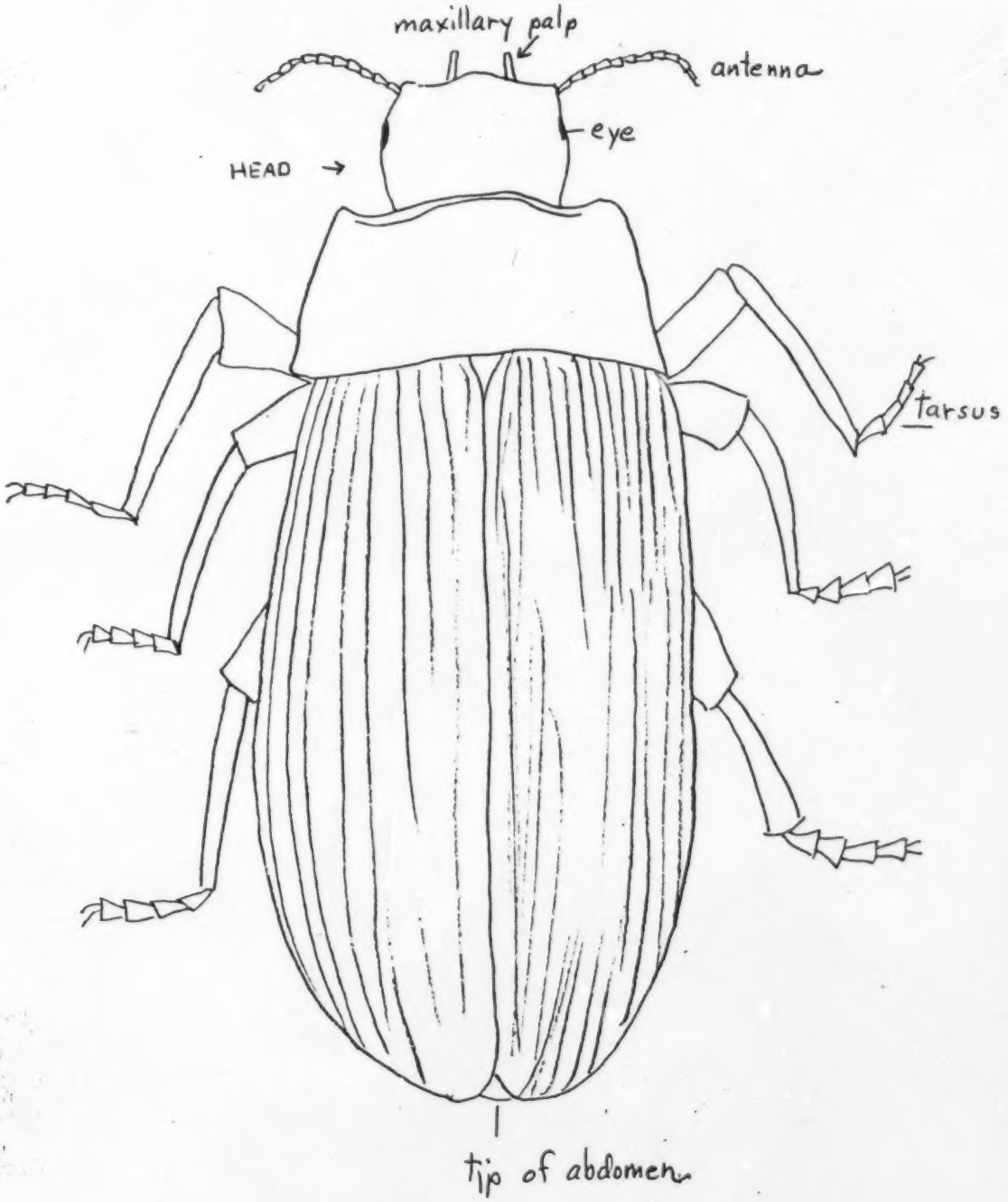
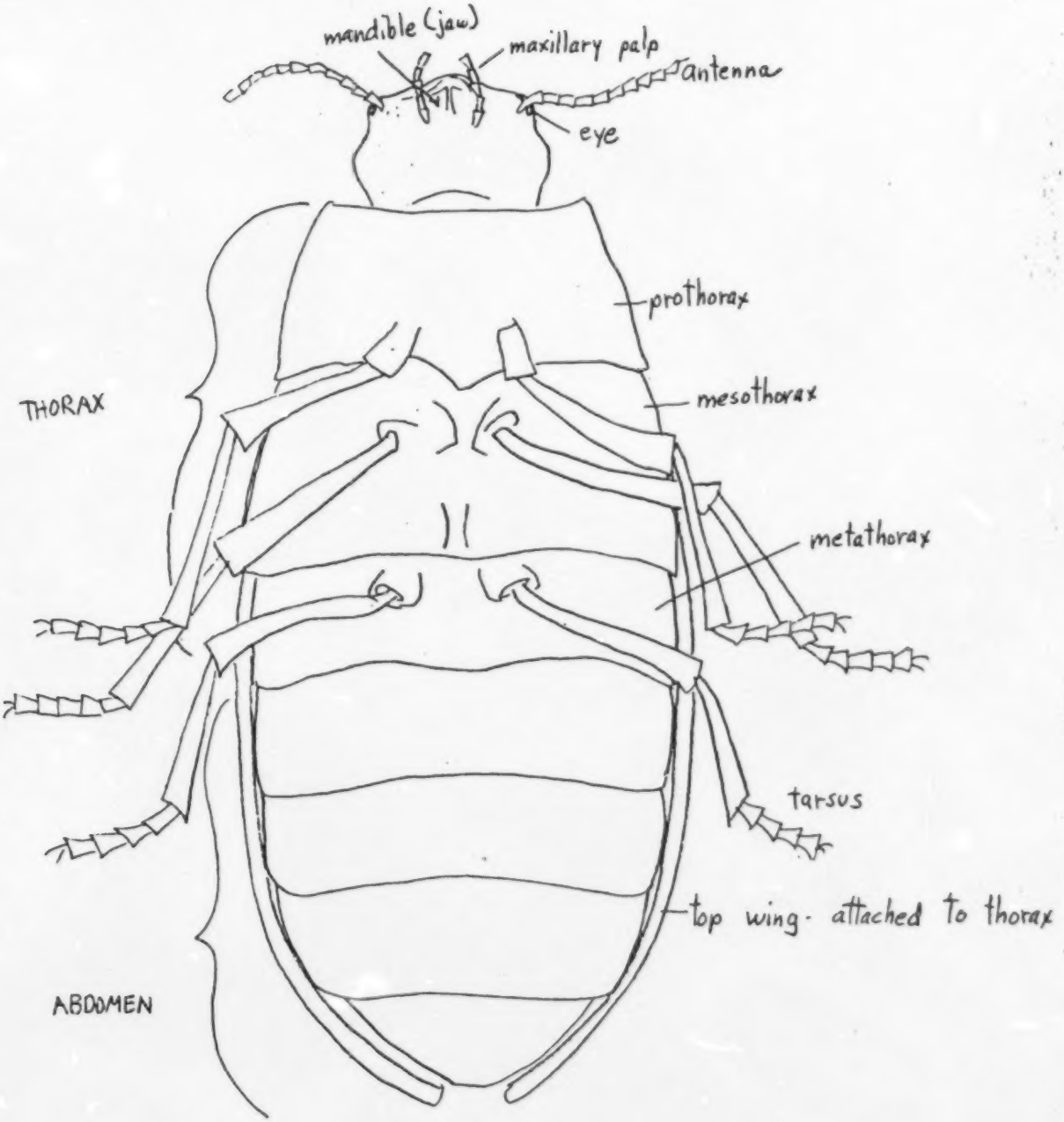
MEALWORM PUPA



MEALWORM - ADULT
DORSAL VIEW



MEALWORM ADULT
VENTRAL VIEW